



MURANG'A UNIVERSITY OF TECHNOLOGY
SCHOOL OF AGRICULTURE AND ENVIRONMENTAL
SCIENCES

DEPARTMENT OF AGRICULTURAL SCIENCE

UNIVERSITY POSTGRADUATE EXAMINATION

2023/2024 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER EXAMINATION FOR MASTER OF
SCIENCE IN AGRICULTURAL ECONIMCS

AEC601: MICRO-ECONOMICS

DURATION: 3 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Answer any four questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

QUESTION ONE (25 MARKS)

- a. Explain why the axioms of consumer preference. (5 marks)
- b. Distinguish between the following terms
- Marginal rate of substitution and marginal rate of technical substitution (5 marks)
 - Cardinal and Ordinal utility (5 marks)
 - Consumer supply and producer supply. (5 marks)
 - Direct and Indirect utility functions (5 marks)

QUESTION TWO (25 MARKS)

- a. When price $P(p_1, p_2) = (1, 2)$, a consumer demand $x(x_1, x_2) = (1, 2)$ and when prices are $Q(q_1, q_2) = (2, 1)$ a consumer demands $y(y_1, y_2) = (2, 1)$ is this behaviour consistent with the model of mixing behaviour. (6 marks)
- b. Consider a U.
- $$U^1(xy) = x^\alpha y^\beta$$
- $$U^2(xy) = \ln x + \ln y$$

Work out the marginal rate of substitution of u^2 along an indifference curve. (8 marks)

- c. Describe the characteristic of the solution of consumer problem. (6 marks)
- d. A consumer whose income is M buys commodity $x(x_1, x_2)$ where price is $p(p_1, p_2)$. Determine the marginal rate of substitution between commodity x_1 and x_2 . (5 marks)

QUESTION THREE (25 MARKS)

- a. Distinguish between compensated and uncompensated demand functions. (8 marks)
- b. Suppose a firm is maximizing profit in the short run with variable factors x_1 and x_2 is fixed. If the price of x_2 goes down, what will be the effect of this in profit. (8 marks)
- c. Prove that profit maximizing terms will always maximize cost. (4 marks)
- d. A firm has a cost theorem give $C(y) = 100y^2 + 1000$. Determine the firm's supply curve. (3 marks)

QUESTION FOUR (25 MARKS)

Consumer cost behaviour $C(y) = y^2 + 1$

Required: Determine the:

- Variable cost $(v(y) Cv(y))$. (2 marks)
- Fixed cost $Cf(y)$. (2 marks)
- Average variable cost $AVC(y)$. (2 marks)
- Average fixed cost of $AFC(y)$. (2 marks)
- Average cost. (2 marks)
- Marginal cost. (2 marks)
- The inverse supply curve (4 marks)
- Determine the profit associated with each price p for the curve. (2 marks)

- ix. Explain the difference between the producer and consumer curve. (3 marks)

QUESTION FIVE (25 MARKS)

A consumer whose income is M buys a consumption bundle $x(x_1, x_2)$ at price $P(p_1, p_2)$

- i. Determine the expenditure equation for the consumer (4 marks)
- ii. Determine the consumer budget line. (4 marks)
- iii. Using suitable illustration show the point at which the consumer would maximise his/her utility. (4 marks)
- iv. If the government opt to tax commodity x_2 at the rate t , what happen to the consumption bundle use illustration to show the possible options (6 marks)
- v. What is the policy implication of taxing x_2 on the consumer utility? Use an illustration to expand your answer. (5 marks)